IMPERIAL MYCOLOGICAL INSTITUTE
24 NOV. 1934

COLONY OF MAURITIUS

# ANNUAL REPORT

## OF THE DEPARTMENT OF AGRICULTURE FOR 1933

Printed by R. W. Brooks, Government Printer, Port Louis, 1934

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## Department of Agriculture, Sugarcane Research Station and College of Agriculture

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| Veterinary Surgeon ... | ... F. E. Lionnet, Ec. Vet. (Alfort). |
| Stock Inspector ... | ... Y. Lefébure. |
| Assistant Stock Inspectors | E Cartier.<br>T. Rivalland.<br>W. Haddon. |

*Entomological Division*:

| | |
|---|---|
| Assistant Entomologist | ... A. Moutia, F.R.E.S., Dip. Agric. (Mauritius). |
| Scientific Assistant ... | ... J. Vinson, Dip. Agric. (Mauritius) |
| Chief Phytalus Officer . | ... A. Delord. |
| Assistant Phytalus Officer | ... P. Regnard. |

*Chemical Division*:

| | |
|---|---|
| Chemist ... | ... R. Lincoln, M.A. (Cantab), Dip. Agric. (Mauritius). |
| Scientific Assistants ... | F. Berchon, Dip. Agric. (Mauritius).<br>R. Rivalland. |

*Tobacco Division*:

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|---|---|
| Government Tobacco Officer | ... G. Corbett. |

*Government Dairy*:

| | |
|---|---|
| Officer in charge of the Dairy | ... Y. Lefébure. |
| Overseer ... ... | ... S. Nunkoo. |

*Statistical Division*:

| | |
|---|---|
| Statistician ... | ... M. Kœnig, A. Inst. P. |

*Clerical Division*:

| | |
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| Chief Clerk ... | ...J. H. Nicolin. |
| Financial Clerk ... | ...E. Emile. |
| Correspondence Clerk | ...I. Félix. |
| Clerks ... ... | ...G. H. Urruty & R. S. Buguth. |
| Librarian ... ... | ...M. Maree. |
| Store Clerk ... | ...R. Chang Kye. |

*Rodrigues*:

| | |
|---|---|
| Agricultural Superintendent | ... R. Jauffret. |
| Overseer ... ... | ... S. Oree. |

## COLLEGE OF AGRICULTURE

| | |
|---|---|
| Principal ... ... | ... G. E. Bodkin. |
| Registrar ... ... | ... M. Kœnig. |
| Clerk ... ... | ... E. Gérard. |
| Lecturers ... ... | L. Baissac, F. E. Lionnet,<br>M. Kœnig, E. F. S. Shepherd,<br>C. A. O'Connor, R. Lincoln,<br>J. H. Nicolin, Y. Lefébure,<br>R. Avice, A. Moutia, F. Berchon,<br>A. North Coombes. |

# Annual Report of the Department of Agriculture for 1933

No. 742/33.

The Honourable The Colonial Secretary,

I have the honour to submit the report on the agricultural conditions of the Colony and the work of the Department of Agriculture for the year 1933.

## PART I

## GENERAL REPORT ON THE WORK OF THE DEPARTMENT OF AGRICULTURE AND THE AGRICULTURAL CONDITIONS OF THE COLONY DURING 1933

*Staff.*

Messrs. A. G. Hill, Senior Geneticist and E. F. S. Shepherd, Botanist and Mycologist, proceeded to Europe on leave of absence on the 21st January. They were replaced by Messrs. N. Craig, Bio-Chemist and G. Orian, Scientific Assistant respectively. They resumed duty on the 23rd December and 30th September respectively.

Mr. G. Corbett, Government Tobacco Officer, left on leave of absence for Europe on the 2nd February. During his absence Mr. C. G. H. Hitchcock acted as Secretary to the Tobacco Board, the duties of Officer in charge of Tobacco Experiment Station being incumbent on Mr. F. Lesur. Mr. Corbett returned from leave on the 23rd December.

Messrs. N. Craig, Bio-Chemist and F. Berchom, Assistant Chemist, who were on leave in Europe, resumed duty on the 23rd March and 30th September respectively.

Mr B. Emmanuel, Overseer died on the 26th January. Consequent on appointments made to replace him Mr. R. Chellapermal was appointed Overseer as from the 1st July.

Mr. F. Leclerc, Overseer, retired on pension on the 3rd June and Mr. L. Humbert was selected to fill the vacant post amongst the overseers from the 1st December.

Mr. J. Laridon, 2nd Grade Clerk was transferred to the Audit Department on the 18th September and was replaced by Mr. M. Maree, IVth Class Clerk.

Mr. A. North Coombes, Assistant Agricultural Instructor was appointed Agronomist as from the 1st October.

Mr. R. Avice, Assistant Sugar Technologist, proceeded on leave to Réunion on the 3rd June and returned on the 28th July.

I wish to record my appreciation of the assistance which I have received from the staff of the Department during the period under review.

*Stations.*

The headquarters, offices and laboratories of the Department of Agriculture are located at Réduit some 1,000 feet above sea level. The following principal areas of land are utilised and controlled by the Department for experimental field work in all its various phases:— Réduit, 22.78 arpents; Barkly (altitude 700 feet) 13.7 arpents; Mon Plaisir, Pamplemousses (altitude 220 feet) 9.62 arpents; La Ferme (altitude 420 feet) 12.82 arpents. A number of minor areas in different parts of the Island are leased or occupied rent free for experimental work principally in connection with sugar cane and tobacco. The local "arpent" is slightly greater than the English acre.

## EXPENDITURE AND REVENUE*

### EXPENDITURE

| | Rs. cs. |
|---|---|
| *Department of Agriculture*:— | |
| Personal Emoluments ... ... | 207,414.70 |
| Maintenance of Gardens ... ... | 7,009.99 |
| General Services ... ... ... | 807.86 |
| Prevention of Plant Pests and Diseases ... | 1,699.67 |
| Prevention of Animal Diseases ... ... | 1,448.86 |
| Upkeep of Stock ... ... ... | 818.31 |
| Travelling Expenses ... ... | 9,714.91 |
| Subvention to Société Horticole ... ... | 500.00 |
| Maintenance of Experiment Stations ... ... | 15,654.52 |
| Apparatus, Chemicals and Laboratory Supplies . . | 2,775.92 |
| Nursery for the distribution of Economic Plants ... | 3,139.38 |
| Destruction of Phytalus Smithi ... ... | 61,225.71 |
| Services rendered by the Railways ... ... | 3,798.28 |
| Contribution to La Revue Agricole ... ... | 500.00 |
| Telephone Charges ... ... ... | 470.15 |
| Registration of Agricultural Chemists ... | 103.28 |
| Upkeep of La Ferme Tobacco Experiment Station ... | 6,143.56 |
| Passages ... ... ... | 8,775.58 |
| Government Dairy ... ... ... | 17,020.07 |
| British Industries Fair ... ... | 1,655.60 |
| Purchase of Fire Extinguishers ... ... | 216.55 |
| *Sugarcane Research Station*:— | |
| Extra Clerical Assistance and Contingencies ... | 913.61 |
| Upkeep of Laboratories and Laboratory Equipment ... | 2,830.03 |
| Travelling Expenses and Services rendered by the Railways ... ... ... | 1,385.76 |
| Labour and Field Equipment ... ... | 6,937.90 |
| Total ... | 362,960.20 |

*The expenditure and receipts shown above are in respect of the calendar year 1933. The official financial year in Mauritius runs from July 1st in one year to June 30th in the following year. The pound sterling is equivalent at present to Rs. 13.33.

REVENUE

| | Rs. cs. |
|---|---|
| Sale of Plants ... ... ... | 2,451.16 |
| „ Sugar cane ... ... ... | 2,949.02 |
| „ Tobacco leaf ... ... | 2,554.38 |
| „ Pineapple suckers ... ... | 176.68 |
| „ Soamin ... ... ... | 72.00 |
| „ B. C. G. vaccine ... ... | 1,253.75 |
| „ Produce from Government Dairy ... | 18,704 45 |
| „ Onion seeds ... ... ... | 11.13 |
| „ Pois mascat ... ... ... | 176.60 |
| Contribution from Co-Operative Credit Societies ... | 1,100.00 |
| Analytical fees ... ... ... | 274.00 |
| Miscellaneous ... ... ... | 628.09 |
| Contribution from Agricultural College Funds towards cost of Sugarcane Research Station ... | 18,000.00 |
| Contribution from Agricultural College Funds towards salaries and allowances of Officers of the Department of Agriculture .. .. | 22,750.00 |
| Contribution from Agricultural College Funds towards pension of lecturers at the Agricultural College ... | 6,000.00 |
| Contribution of Agricultural College Board towards Phytalus smithi campaign ... ... | 8,000.00 |
| Contribution from Stock Breeders Association towards cost of importation of a bull ... ... | 1,000.00 |
| Contribution of Sugar Industry Reserve Fund towards Phytalus smithi campaign ... ... | 3,000.00 |
| Special cess on Sugar exports for Phytalus destruction (Ordinance No. 2 of 1920) ... ... | 45,353 57 |
| Total ... | 134,448 83 |

*Meteorological conditions and sugar production.*

Weather conditions, were, upon the whole, very favourable during the year. No cyclone occurred and in consequence the total of the rainfall showed during the summer months a pronounced deficit on the average; however the distribution was, in the full sense of the word, excellent.

It must be remembered that, owing to the immense quantities of rain often brought down by distant cyclones, the average figure for the rainfall during the summer months in Mauritius is high and, in general, altogether in excess of agricultural needs.

Temperature was high during the growing months and low during the ripening season thereby favouring both tonnage of cane and sucrose content. The following figures were recorded at the Central Experiment Station, Réduit. Supplementary information in this respect is given in the Appendix.

TABLE I

*Station: Department of Agriculture, Réduit*

| Months and Years | Air temperature °C | Departure from normal °C | Rainfall m/m | Departure from normal % |
|---|---|---|---|---|
| 1932 | | | | |
| November | 21.9 | +0.2 | 27.1 | −49 |
| December | 22.8 | −0.5 | 51.3 | −62 |
| 1933 | | | | |
| January | 24.7 | +0.6 | 139.2 | −46 |
| February | 24.4 | +0 1 | 164.1 | −40 |
| March | 24.0 | +0.3 | 205.7 | −34 |
| April | 22.8 | +0.2 | 101.8 | − 8 |
| May | 20.6 | +0.1 | 73.0 | −27 |
| June | 18.9 | +0.3 | 66.7 | −25 |
| July | 17.1 | −0.8 | 73.8 | + 4 |
| August | 17.4 | −0.5 | 34.8 | −34 |
| September | 17.7 | −0.9 | 50.9 | + 8 |
| October | 19.7 | 0 0 | 22.7 | −55 |
| November | 21.6 | −0.1 | 15.1 | −71 |
| December | 23.2 | −0.1 | 47.3 | −66 |

The production of sugar in 1933 was the next best on record, totalling 261.46 thousand tons as against a maximum of 277 thousand tons produced in 1914. The following table exhibits the comparative production of the past seven years.

TABLE II

*Yields of Sugar in thousand metric tons*

| Districts | 1933 | 1932 | 1931 | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|---|---|---|
| P/plemousses and Riv. du Rempart | 57.77 | 62.73 | 41.81 | 43.00 | 54.68 | 59.55 | 52.72 |
| Flacq | 41.37 | 35.97 | 27.91 | 37.81 | 38.91 | 41.17 | 33.21 |
| Moka | 40.08 | 34.12 | 20.83 | 32.10 | 35.97 | 34 76 | 30.88 |
| Plaines Wilhems | 18.22 | 17.05 | 11.64 | 14.62 | 15.66 | 16.40 | 15.06 |
| Black River | 8.88 | 9.06 | 6.29 | 9.81 | 9.22 | 9.72 | 9.03 |
| Grand Port | 50.66 | 46.66 | 27.01 | 37.09 | 36.41 | 41.41 | 35 88 |
| Savanne | 44.48 | 41.63 | 28.52 | 46.53 | 47.18 | 50.42 | 41.22 |
| Total | 261.46 | 247.22 | 164.01 | 220.96 | 238.03 | 253.43 | 218.00 |

The extraction of sugar per cent of cane was exceptionally high this year; one factory realized 12.05% while 12 factories exceeded 11.50%. The average was 11.25. The next best average values were 11.01 in 1932 and 10.92 in 1930.

*Grades of Sugar.*

The proportion of Raws was 87.70 of the total production, vesous were 11.80% and low sugars 0.50%.

The following table illustrates the change in this respect during the past ten years brought about by the introduction of the New English Tariff in 1928.

TABLE III

*Grades of Sugar 1924—1933*

| Year | Vesous | Raws | Low |
|---|---|---|---|
| 1924 ... | 98.34 ... | ... ... | 1.66 |
| 1925 ... | 98.21 ... | ... ... | 1.79 |
| 1926 ... | 98.10 ... | ... ... | 1.90 |
| 1927 ... | 98.63 ... | ... ... | 1.37 |
| 1928 ... | 71.80 ... | 27.30 ... | 0.90 |
| 1929 ... | 23.90 ... | 75.20 ... | 0.90 |
| 1930 ... | 16.80 ... | 82.50 ... | 0.70 |
| 1931 ... | 16.20 ... | 83.10 ... | 0.70 |
| 1932 ... | 12.10 .. | 87.50 ... | 0.40 |
| 1933 ... | 11.80 ... | 87.70 ... | 0.50 |

*Area under Sugar Cane.*

At the beginning of 1933, the area under cane was estimated at 133,867 acres, representing a decrease of about 1,000 acres on the figure for the previous year. Estates with factory cultivated 55,738 acres; estates without factory, 38,499 acres, giving a total Estate cultivation of 94,237 acres. The balance was made up by small planters, mostly Indian.

*Disposal of the 1932 Sugar Crop.*

The total quantity of sugar exported at the end of the 1932–33 export year (July 31, 1933) was 237,724 metric tons, distributed as follows :—

| | | | |
|---|---|---|---|
| Great Britain | ... | 236,837 | metric tons |
| Hong Kong | ... | 610 | ,, |
| Other Places | ... | 277 | ,, |
| Total | ... | 237,724 | ,, |

The exportation for the 1933–34 year was as follows at the end of December 1933 :—

| | | | |
|---|---|---|---|
| Great Britain | ... | 125,454 | metric tons |
| India | ... | 2 | ,, |
| Hong Kong | ... | 102 | ,, |
| Other Places | .. | 140 | ,, |
| Total | ... | 125,698 | |

*Sugar market.*

The market for sugar continued dull throughout the year. The average net price realized at the end of the year approximated to Rs. 6.16 per 50 kilog, exclusive of Imperial preference representing a slight falling off on last year's sale price.

The local Sugar Syndicate continued its operations on the same lines as heretofore controlling more than 80% of the total sugar production of the Island.

*Labour Conditions.*

No further reduction in wages took place during the year. The index numbers for the cost of living continued to trend downwards but prices of the principal food stuffs remained either stationary or with an upward tendency,

The labour supply was fairly satisfactory during the year and one of the heaviest cane harvests was reaped without any great difficulty in this respect.

*Sugar Machinery.*

Machinery to the value of Rs. 594,719 was imported during the year, as against Rs. 277,656 last year. Tractor parts to the value of Rs. 1,518 and ploughs, to the value of Rs 1,969 were imported. Tramway material, for use on Sugar estates, to the value of Rs. 287,371 were imported during the year, as against Rs. 110,289 last year.

*Varieties of Cane.*

A Census of Cane varieties cultivated on Estates was taken during the year. The percentage distribution of the principal varieties is given in the following table. More detailed figures are given in Bulletin No. 7 Statistical Series.

TABLE IV

| | |
|---|---|
| Tannas (mostly white) | 53% |
| M 55 | 5 |
| M 131 | 5 |
| D K 74 | 6 |
| R. P. 6 | 2 |
| R. P. 8 | 4 |
| D. 109 | 4 |
| D. 130 | 2 |
| 252 | 1 |
| B. H. 10/12 | 7 |
| M. 2716 | 1 |
| P. O. J. 213 | 2 |
| 55/1182 | 1 |
| Rich Fund | 1 |
| Other varieties | 6 |

Thus, while Tanna continues to be the leading cane, B.H. 10/12 is becoming an important rival. Other varieties such as M2716, M2316, M522 are full of promise. Further extensive trials are being continued by the Sugar Cane Research Station and are reviewed elsewhere.

*Fertilisers.*

During the year, 20,405,353 kilos were imported, to the value of Rs. 2,328,299 as compared with 12,726,702 kilos last year, valued at Rs. 1,325,439.

*Sugar Cane Research Station.*

A Resumé of the Fourth Annual Report of the Station is included in this report. It reflects that the progress attained during previous years has been maintained.

*Insect Pests.*

No material change has taken place in the status of *Phytalus Smithi*. Arrow. The captures during the 1932–33 season were appreciably less than usual ; no extraordinary significance can be attached to this fact as there are so many peculiar factors connected with this form of control. There is no doubt that in some parts of the Island this pest is on the move—leaving previously infested areas and invading fresh ones.

Mr. W. F. Jepson B.Sc., A.R.C.S. who was mentioned in last year's report as having been selected to investigate control methods for the pest, arrived in Mauritius in October. He had previously studied the control of white grubs—their status and parasites—in Porto Rico. He also paid a visit to the Japanese Beetle laboratories in the U.S.A. is now engaged in making a preliminary survey of the position in Mauritius.

The biology and control of a number of other insect pests were studied by the Entomological Division during the year under review.

*Plant Diseases.*

The annual survey of Sugar cane diseases was carried out in the field and some varieties moderately susceptible to gumming were discovered. A somewhat severe outbreak of "Fourth" Disease was discovered in a certain portion of the Island during May also a widespread occurrence of *Fusarium monoliforme*. Shel.

The Blank Shank of tobacco (*Phytophtora parasitica* Dast emend Ashby) still gave considerable trouble though the cessation of applying pen manure brought about some amelioration. The propagation of resistant varieties appears to be the only really successful method of dealing with this obnoxious malady.

Diseases of pineapples gave trouble in some areas.

*Tobacco Industry.*

This industry flourished exceedingly during the year. Excellent weather conditions combined with a sure market rendered the cultivation of this crop a most attractive proposition. To small planters in particular—producers of air cured leaf—the growing of this plant serves as a source of much appreciated ready cash. Cost of production in such cases is very low indeed as tobacco plants are usually raised close to the dwelling house and, therefore, have the advantage of natural manurial conditions and close, daily supervision. As time goes on

tobacco planters gain fuller experience as to the more exact requirements of the crop but it is evident that in the near future types of tobacco will have to be bred which will more fully meet the local requirements. A Tobacco Breeding Officer was appointed during the year and arrived in October to take up his duties. The affairs of the Government Tobacco Warehouse are dealt with in a separate publication.

*Aloe fibre.*

The export amounted to 422 tons, valued at Rs. 87,802 as against 286 tons last year. Quotations for Prime, Very Good and Good rose by Rs. 15 per ton during the year, but the market, upon the whole remains very dull.

*Pineapple Industry.*

Export during the year amounted to 5,281 cases of pineapple preserves. It is estimated that there are now fifty acres under the Smooth Cayenne pineapple—an appreciable increase over the previous period. The Department has given every assistance to this industry in the shape of supplies of planting material, advice on cultural methods and control of diseases and pests.

*Tea Industry.*

The improvements noted in last year's report have been well maintained. The Bois Chéri Estate has made considerable improvements in the factory buildings and some new machinery has been imported. Prices for local tea remained at a satisfactory level during the year.

*Coconut Industry.*

The export of copra during the year, amounted to 1,203 tons valued at Rs. 201,393 as compared with 1,746 tons valued at Rs. 287,516 in 1932. The export of coconut oil during the year was 4,385 litres valued at Rs. 1,992 as against 5,480 litres valued at Rs. 2,176 last year.

*Alcohol.*

The total quantity of alcohol distilled for human consumption amounted to 553,287 litres as compared with 378,209 last year. The quantity of alcohol distilled for industrial purposes was 480,554 litres.

The exportation of rum in 1933 was 36,489 litres valued at Rs. 7,792 as against 5,308 litres, valued at Rs. 1,489 in 1932.

*Veterinary, livestock and Government Dairy.*

Surra gave some trouble during the year and a herd of deer (*Cervus hippelaphus*, Cuv) were infected ; it is believed that this is the first record of such an event in Mauritius.

Stock Raising continues to be of interest to a number of people and the insertion and approval of an item in the 1933–34 Colonial Budget for the purchase of two Hereford Bulls will, without doubt, give a further fillip to this already established industry.

The Government Dairy experienced a satisfactory year but towards the end thereof surra made its appearance and limited the milk output to some extent. The sale of milk to the public has proved undeniably popular and is now only limited by the quantity available for sale.

*Co-operative Credit Societies.*

The administration of these organisations has been augmented by the creation of a post of Assistant Registrar. Solid progress has been attained and a number of Societies, previously overloaded with an incubus of overdue loans, have succeeded in securing payments and generally improving their position. It was not found possible to bring into bearing the forms of amended legislation but this, without doubt, will be accomplished during 1934.

*Research.*

All Divisions of the Department carried out some research during the year. In this connection may be mentioned the examination of illicit Rums by the Chemical Division which resulted in special legislation being introduced, the work of the Entomological Division on certain pests and the manurial experiments of the Tobacco Division

*College of Agriculture.*

The institution functioned smoothly and efficiently. A separate report is issued on its activities.

*Rodrigues.*

The usual drought took place but the hardship therefrom was considerably ameliorated by the presence amongst the inhabitants of a quantity of ready cash—the proceeds of unusually lucrative sales of produce. Efforts to induce the inhabitants of this Island to produce a better quality of tobacco leaf have proved successful and the prices received at the Government Tobacco Warehouse for recent shipments have been declared to be satfisfactory.

Réduit,
February 12th, 1934.

G. E. BODKIN,
Director of Agriculture.

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## PART II

## REPORT OF THE SUGARCANE RESEARCH STATION AND DIVISIONAL EXPORTS OF THE DEPARTMENT OF AGRICULTURE

A full report of the activities of the Sugarcane Research Station for the year is published, as usual, in a separate report, a synopsis only being given here.

*Cane Breeding.*

The work of the Geneticist's Division of the Station was continued along the same lines as last year, no change being made in the breeding policy and little in the technique. The cane breeding work carried out in 1933 and since the opening of the Station in 1930 is summarised in the following tabular statement :—

| | 1930 | 1931 | 1932 | 1933 |
|---|---|---|---|---|
| Number of :— | | | | |
| (1) Controlled crosses made including selfings ... .. | 409 | 355 | 457 | 466 |
| (2) Uncontrolled crosses ... | 569 | 370 | 46 | 1 |
| (3) 1st Year seedlings raised in boxes ... ... | 52,840 | 72,888 | 157,948 | 64,883 |
| (4) 1st Year seedlings potted out for planting ... ... | 20,108 | 29,363 | 35,863 | 26,032 |
| (5) 1st Year seedlings distributed to estates for planting ... | 3,000 | 5,000 | 16,040 | 3,645 |
| (6) Mature seedlings from (4) and (5) above selected to date for testing in 2nd year seedling trials ... .. | 233 | 263 | 130 | ... |
| (7) Second year seedlings from (6) above selected to date for testing in 3rd year seedling trials ... ... | 31 | .. | ... | ... |

*Variety Trials.*

Eighteen variety yield trials were harvested during the year. The best varieties in these experiments as judged by yield of sucrose per arpent are shown in the following table but this table should not be read as expressing the order of merit of the various varieties.

| District | No. of Trials | Best Varieties |
|---|---|---|
| Savanne | 6 | M.7/23, M.27/16, White Tanna, M.26/20 M.23/16, M.5/22, BH 10 (12), M.13/18, M. 10/25, M. 12/21, M. 29/16, R.P. 6, R.P.8, M.109/26. |
| Moka | 2 | White Tanna, R.P.8, M.27/16, M.14/26. |
| Flacq | 5 | P.O.J. 2878, M. 23/16, M. 29/16, White Tanna, M.27/16, M.35/17, P.O J. 2725, M.9/18, BH.10 (12). |
| Pamplemousses | 5 | P. O. J. 2878, D. 109, M. 109/26, P.O J. 2725, M. 26/20, B.H. 10 (12), M. 15/20, M. 5/22, M. 13/18, M. 27/16, M. 7/23, M.14/26. |

Certain of the above varieties are not to be recommended for general propagation as they have shown undesirable characteristics in the field but as these and the actual yields cannot be included here reference should be made to the full report of the Station.

*Bio-Chemical Division. Soils.*

During the year under review, the preliminary investigations with the properties of the soils of the sugar cane areas was completed. The results have been written up in the form of a Bulletin and are practically ready for printing. The main point brought out in this work this year is the extreme poverty of the high laterised soils in potash.

Analysis of the clay fractions of certain selected soils have confirmed the findings made from the results of the analyses of the whole soil, as regards degree of laterisation of the various types.

Samples of cane were obtained from a number of the soils previously examined, to see whether there is any relationship between the various mineral elements present in the cane and those present in the soil. The results have not yet been examined statistically, but from a casual examination, there seems to be no simple relationship.

*Other Investigations.*

Samples have been taken from a small block of Uba Marot cane from time to time, to see whether it ever accumulates sufficient sugar to be worth while planting for crushing. The results obtained seem to indicate that the variety is an extremely slow maturer, probably on account of its extreme vigour. Where conditions are such that there is a long period unfavourable for growth it is possible that the cane may accumulate sufficient sucrose to make it worth while planting on certain lands on a limited scale.

Further work carried out included the examination of representative batches of seedlings of various combinations to investigate the method of inheritance of sucrose content and stool weight. These figures have not yet been calculated.

The 2nd Year seedlings from ten of the Latin Squares reaped this year have been examined both by hand refractometer and by the more usual method of crushing and analysing the juice by saccharimeter, in order to find out whether the correlation previously found with noble canes still holds good with the seedlings of mixed parentage.

*Manurial Trials.*

In all nine manurial trials were reaped during the year, three dealing with nitrogen, three with potash and three with phosphates. In two of the nitrogen trials small but fairly significant increases were found, and in two of the potash and one of the phosphate trials significant increases were obtained.

*Physiological Botany.*

The main lines of work of the division have been as follows:—

*Growth rate of Sugarcane.*

Experiments on the growth-rate of sugar cane varieties have been continued both at Réduit and at Pamplemousses. In the last few years valuable data on the mode of growth of virgin and ratoon canes

of P.O J. 2878 and White Tanna have been obtained, and, observations on BH. 10/12 virgin canes were commenced at the end of 1932. The effect of soil moisture upon growth has been studied in some detail, and it has been shown that the effect of soil moisture differs for different periods of the year, this being due to the varying temperatures during these periods. A series of growth rate experiments has been in progress at Réduit in which the soil moisture is kept above its limiting value for the whole year. Data have been obtained which enable the effect of temperature upon growth to be more fully isolated and evaluated.

*Course of growth in virgin canes.*

In this work 25 stools of cane are dug up completely every month, and the fresh and dry weight of all the organs determined together with leaf area and volume of cane. The dry material is analysed for reducing sugars, sucrose, nitrogenous substances, calcium, potassium and phosphate. In this manner a complete picture of the qualitative as well as quantitative growth of the cane will be obtained. The data have already shown that whereas many features are correlated with the growth of the stool, as measured by the increase in dry weight, two characters are outstanding as indicators of growth, viz: fresh weight and stem volume.

*Root Investigations.*

The root investigations have in the main been concerned with the development of the root-system of ratoon crops. It has been shown that the young ratoon stool uses the root system inherited from the previous crop to tide over the period until its own babas have formed their roots The ratoon stool finally forms its own root-system, the system inherited from the previous crop becoming gradually inactive.

The root system of a vigorous selected seedling of the cross POJ. 2878 × Uba Marot was studied in detail by the block method and reconstructed at Pamplemousses It proved to be the most extensive root system yet investigated, the roots passing down to depths considerably below 12 feet. It appeared to be the ideal type of root-system to withstand the ravages of cyclone and Phytalus.

*Sett-Soaking Trials.*

The sett-soaking trial at Pamplemousses was harvested at the end of the year, and an increase in yield of 6½ tons of cane (1.11 tons sugar) per acre was obtained as a result of soaking setts in a saturated solution of lime for 8 to 12 hours before planting.

*Variability of Sugarcane in the Field.*

In this work 1,200 stools were individually weighed, and the coefficient of variability and standard errors of various sizes and shapes of plot determined. The information obtained will be of considerable help in laying out small scale field trials.

Experiments on the control of arrowing, and the study of the growth of individual roots are in progress.

A. GLENDON HILL,
Senior Geneticist,
i/c Sugarcane Research Station.

## AGRICULTURAL DIVISION

*Central Experiment Station, Réduit.*

Varietal plantations of sugarcanes, ground nuts, manioc, eddoes, yams and other food crops were made. Cane cuttings were sold to planters. Planting material of food plants were distributed free to all persons applying for them.

A new field was established to propagate the best varieties of sugar canes. It is fenced on all sides by stone walls, and is well protected from damage which young plantations suffer from hares and deer. Water for irrigation is available throughout the year. This additional multiplication area will facilitate rapid propagation and distribution of cane cuttings to the planting community.

The plantation of different species of coffee in Field 15 is progressing satisfactorily.

Thousands of pineapple plants were propagated by the new ring method. Two thousand suckers were sold to planters at Rs. 3 per hundred.

*Royal Botanical Gardens, Pamplemousses, Economic Section.*

Plantations of selected cane varieties were made. Many applications were received for cane cuttings, the sales amounted to Rs. 447.05cs. 39.224 tons of canes were sold to Beau Plan and Mon Rocher Estates.

A new multiplication plot of sugarcane was established at Mon Rocher; it was planted with seventeen of the best varieties.

The propagation of "Smooth Cayenne" pineapple was continued. 2,500 suckers were sold, and 2,810 were planted out at Mon Plaisir. A small consignment of ripe fruits was sent to the Mauritius Canning Company.

Varietal experiments were carried out with different kinds of food plants such as maize, yams, soya, ground nuts, sweet potatoes, eddoes, manioc, etc.

The experimental plantation of Pemba coconuts, Hydnocarpus Wightiana (Chaulmoogra), Coffee and Areca nuts were kept in good condition; vacancies were replaced where required.

609 mango grafts, 75 lime, 301 letchis and 12 combana (Citrus hystrix) layers were made.

Free distribution of seeds, cuttings and tubers of food plants were made to Co-operative Credit Societies, School gardens, Government Departments, Public Institutions, and to settlers on various allotments.

*Ornamental Section.*

The work of improvement was continued in different parts of the gardens. Many plants of Bougainvillea, Poinsettias, Hibiscus, Crotons, Cassias, Palms were planted and are growing well. Collections of ferns, begonias, caladiums, and other ornamental plants were kept in good condition.

*Barkly Experiment Station.*

This station was visited during the year by many planters and other persons in order to buy plants and to obtain information of agricultural interest.

The orchard has now recovered from the effects of the 1931 cyclone and is in very good condition. A large number of economic and fruit plants were raised in the Nursery for sale to the public.

New varieties of Japanese Persimmons, Peaches, Nectarines, Almonds, Oranges, Limes, Lemons, Pomelos and Mandarines were received from South Africa and have been successfully planted out.

The grape vines ordered last year from Australia have been propagated and are now available for distribution.

Stocks of pecan nuts raised from seeds have been grafted with imported choice varieties.

Plantations of bananas, sweet potatoes, yams, manioc, maize, eddoes, and other food crops were made. A large number of cuttings and tubers were distributed free to plot holders on the different allotments and also to many shareholders of Co-operative Credit Societies.

553 fruit and ornamental trees were supplied to Bell Village, and have been planted along the avenues and cottages.

Wind belts of "Pitchecolobium" were planted in the Citrus orchard in order to protect the young plants.

Several "Hydnocarpus Wightiana" (Chaulmoogra oil plant) used in the treatment of leprosy fruited for the first time; it is intended to propagate this useful medicinal plant.

The "Chinchona Ledgeriana" plants which were raised last year in the nursery have been planted in the "Trou aux Cerfs" at Curepipe where they are making rapid growth; this species which is considered the richest in quinine is chiefly grown in India and Java.

Pepper vine cuttings received from Java and Madagascar have started growth.

Plants and seeds were sent to the following:—

Director Station Agronomique, Réunion.
Agricultural Superintendent, Rodrigues.
Director of Agriculture, Seychelles.
Officer in charge Botanic Gardens, Gold Coast.
Director of Agriculture, Ceylon.
Director of Agriculture, Nyasaland.
Havard University, Cuba.
Deputy Director of Agriculture, Punjab, India.
Deputy Director of Agriculture, Burmah, India.

*Abercombie Nursery.*

A large stock of economic fruit and ornamental plants were raised. This nursery still continues to fulfill its purpose of supplying cheap plants to the public. The sales during the year amounted to Rs. 1,000.50cs.

*Food Settlement, St. Martin, La Ferme.*

The plots on this area were leased to shareholders of the local Co-operative Credit Society. Good crops of maize, manioc and vegetables were obtained.

*Le Réduit Grounds.*

These grounds were kept in good condition, improvements were made in the vicinity of the Bout du Monde.

*School Gardens.*

One garden was closed and a new one started. The number of registered school gardens is the same as last year, viz: 35. The Senior Agricultural Officer and his Assistants paid regular visits to all the gardens in order to give advice and supervise the work done.

Prizes were awarded for the best kept school gardens.

The majority of Head Teachers and staffs have shown great interest in the upkeep of their gardens.

*Allotments.*

Progress with the Allotment Scheme was made during the year. New land was obtained and plots placed at the disposal of unemployed persons willing to cultivate them. The plot holders, 82 in number, are supplied with seeds, plant cuttings and tubers of food crops and a supply of timber and cane straw to erect huts.

Many of the allottees have built huts in which they reside, their plantations which at first suffered from drought are now growing well.

C. A. O'CONNOR,
Senior Agricultural Officer.

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## BOTANICAL AND MYCOLOGICAL DIVISION

The Botanist and Mycologist proceeded on leave of absence on January 21st and returned to duty on September 28th. During his absence he was replaced by the Scientific Assistant.

*Diseases of sugar cane.* (*Saccharum spp.*)

During September and October a disease survey was carried out in the field on the new varieties at present being propagated on several estates These varieties are B.H 10/12, M. 2316, M. 2716, M. 2916, M. 1718, M. 1318, M. 2620, M. 1221, M. 522, M. 5426, M. 1426, M. 109/26, M. 4726, P.O.J. 2878, M. 723 and M. 3319.

As a result it was found that M. 2916, M. 2620, M. 522 and M. 10926 are more than moderately susceptible to gumming.

*Leaf Scald* (*Bacterium albilineans Ashby*).

The plot laid out in 1932 with varieties of known resistance or susceptibility to scald in the field, to test a method of determining scald resistance in new seedlings was reaped towards the end of the year under rewiew.

As mentioned in last year's report five out of six varieties responded to inoculation in accordance with their known behaviour to scald in the field.

In spite of slight discrepancies between the behaviour of some of the varieties in this plot and that in the field, particularly at harvest time, the method seems a promising one for testing scald resistance in new seedlings.

*Gumming* (*Bacterium vasculorum* (*Cobb*) *G. Smith*).

The planting out of the gumming resistance plot with new seedlings, which was started at the end of 1932, was continued during the year under review. Final observations on these seedlings will be made in 1934.

"*Fourth*" *disease.*

A rather severe outbreak of this disease occurred in two fields of six months old virgin B.H. 10/12 canes at an estate in the Moka district in May. The cause of the disease is still unknown. Experiments on its transmission in infected cuttings are in progress.

*Pokkah-boeng* (*Fusarium monilliforme Shel.*)

A widespread outbreak occurred on P. O. J. 2725 and P. O. J. 2878 canes on two estates respectively. No deaths resulted, the disease having been confined to the leaves.

*Diseases of Tobacco* (*Nicotiana tabacum L.*)

*Mosaic* was commonly encountered, but, except in places where there was a tendency to neglect "roguing," the amount of infection was not great. Investigations on the transmission of mosaic are in progress.

*Black Shank* (*Phytophthora parasitica* Dast. emend. Ashby).

As in most years there were rather heavy outbreaks of this disease during the warm months of the year. Cessation of the practice of applying pen manure has not reduced the amount of infection to any marked extent, but there are indications that it may exert some influence on the time at which the plants are first attacked in relation to their stage of growth.

Experiments with negative results were carried out on the control of the disease by applications of Cheshunt Compound and uspulum on a field scale.

Work on the selection of resistant varieties is being planned with the Tobacco Breeding Officer. The propagation of resistant varieties appears to be the only successful means of coping with the disease.

*Sand Drown* occurred in a field at Phœnix.

*Diseases of Pineapple* (*Ananas Sativus* Schult.)

A wilt associated with the mealy bug *Pseudoccus brevipes* was investigated. This insect has been found to cause pineapple wilt in Hawaii.

The dry side rot of the fruit and the crown rot reported in 1932 again broke out on an alarming scale at Long Mountain. The crown rot is found only on Smooth Cayenne, but the side rot is widespread on both the Queen and Smooth Cayenne varieties.

Investigations on the etiology of these diseases are in progress, and spraying experiments in the flowering stage of the plants have been planned.

*Diseases of other crops.*

Potatoes (Solanum tuberosum L.).

*Blight* (*Phytophthora infestans* Mont. de Bary).

An experiment was carried out to compare the effectiveness of Bouisol with that of Burgundy mixture in the control of this disease. The conclusion drawn from this experiment was that Bouisol is as efficient a fungicide as Burgundy mixture, is much easier to prepare and slightly cheaper than the latter.

An outbreak of Scab (*Actinomyces scabies* (Thax.) Guss.) occurred at Rose Hill. It does not seem to be widespread in the Island.

Tea (*Thea sinensis L.*).

A root disease of seedlings was found to be associated with *Pythium sp.* Applications of Cheshunt Compound were recommended.

Bananas (*Musa* spp.).

What appeared to be a bacterial wilt of the Dwarf variety at Montagne Longue was investigated.

An outbreak of Panama disease (*Fusarium cubense* E.F. Sm.) occurred on a few plants of the variety "Gingeli" ("Lady's Fingers") in a garden in Rose Hill.

Other duties included supervision of the inspection of imported and exported plants, disinfection being carried out when necessary.

The Botanist and Mycologist, and in his absence, the Scientific Assistant, delivered lecturers and supervised practical work in Botany and Mycology at the College of Agriculture.

E. F. S. SHEPHERD,
Botanist and Mycologist.

## SUGAR TECHNOLOGICAL DIVISION.

*Sulphurus acid in raw sugar.*

The suppression of $SO_2$ for the manufacture of raw sugar has generalized, with marked profit. Experiments carried out during the crop in factories still using the sulphodefecation process have proved that sugar obtained from turbid clarified juices, even with an alkaline reaction, contained a high percentage of $SO_2$. In such cases it is recommended to filter the clarified juice.

*Control of pan boiling.*

Four Micromax recorders for pan boiling control ordered by the Sugar Industry Reserve Fund Committee, were experimented with during the latter part of the crop. These appliances have proved very helpful for the production of crystals of uniform size and have shewn that circulation was deficient in all the coil pans on which they were placed.

*"Controle Mutuel" and Factory results.*

Final figures obtained from the "Controle Mutuel" showed that the average percentage of sucrose in the cane was 13.24 as compared with 13.04 and 12.73 in 1932 and 1931 respectively. That figure is the highest recorded since 1923. The quality of juice was satisfactory and manufacture easy. The standard of work continued to improve.

Sugar extracted % cane reached 11.26—the highest figure ever recorded. The proportion of raws was 87.7%. Their polarization and keeping qualities were satisfactory.

*Educational.*

Lectures followed by practical work were delivered by the Sugar Technologist and the Assistant Sugar Technologist to the students of the College of Agriculture in Sugarcane cultivation, Sugar House Chemistry, Sugar Technology, Mechanical Engineering, Building Construction and Surveying.

The students visited sugar factories repeatedly with the Sugar Technologist and his Assistant during the off season and the crop, for practical demonstrations.

LOUIS BAISSAC,
Sugar Technologist.

## VETERINARY DIVISION.

*Importation of animals.*

The following animals were imported after examination prior to landing. For purposes of comparison the figures for 1932 are given.

| | From Foreign Countries | | From Dependencies | |
|---|---|---|---|---|
| | 1933 | 1932 | 1933 | 1932 |
| Cows and oxen ... ... | 6,237 | 3,307 | 86 | 310 |
| Horses ... ... | 14 | 2 | 6 | 3 |
| Donkeys ... ... | ... | ... | ... | 1 |
| Pigs ... ... | ... | ... | 1,246 | 1,840 |
| Sheep ... ... | 348 | 142 | 581 | 734 |
| Goats ... ... | ... | ... | 1,998 | 2,108 |
| Dogs ... ... | 7 | 6 | 10 | ... |
| Turtles ... ... | 75 | 118 | 62 | 200 |
| Fowls ... ... | 25 | ... | 14,506 | ... |

*Quarantine.*

Seven dogs were placed under six months' observation at the Government Kennels, Réduit and subsequently delivered to their owners.

*Contagious Diseases. Surra.*

8,538 animals were examined during the year under review, as against 7,403 last year. Twenty eight positive reactions were recorded on bovines during the year. All of them recovered after adequate treatment of Atoxyl and Arsenious acid. Six positive cases were

recorded on equines which, according to regulations in force were destroyed. A severe outbreak of this disease occurred on wild deer at Nouvelle France and 125 head were reported to have died. Prophylactic measures have been successfully applied with a view to avoiding a further spread.

*Tuberculosis.*

142 animals, milch cows 55 and herd cattle 87, have been tested for tuberculosis with negative results.

*B. C. G. Vaccine.*

1,520 doses of this vaccine were delivered to breeders. The general healthy condition of our herds is chiefly to be attributed to the application on a large scale of this vaccine.

*Poultry Diseases.*

As from last year the investigation and research work on poultry diseases has passed from the Entomological Division to the Veterinary. Vaccination against fowl pox was started during the year and 200 birds were injected with encouraging results.

Additional work of a routine nature comprised surprise visits to public and private abattoirs, assistance to the Police in determining evidence of cruelty to animals, examination and treatment when necessary of Government animals.

*Government Dairy.*

Apart from animals affected with Surra, one cow was treated for enteritis, 4 cases of abortion as against 12 last year and 21 the year before were recorded. One cow died as a sequel of Antepartum paralysis; one from pneumonia, a third one from acute peritonitis and a fourth accidentally.

*College of Agriculture.*

Lectures were delivered weekly to first year and third year students.

F. E. LIONNET,
Government Veterinary Surgeon.

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## ENTOMOLOGICAL DIVISION

*Campaign against Phytalus smithi Arrow.*

The method of control still employed against this insect pest is the hand collection of adults, pending forthcoming expert advice for mechanical methods more economical and successful.

The number of beetles captured since the start of the present campaign, i.e., October to the present date (31st December) amounts to 166,798,715 compared with 191,585,965 for the same period in 1932; and the actual sum spent for the destruction of the above number of insects is Rs. 41,468 60 compared with Rs. 39,238.95 cs. for last year.

The emergence of the adult beetles started late in the season, about the middle of November as compared with last year when it commenced at the beginning of October. This may be accounted for by incidence of dry weather which prevailed during the months of September and November 1933.

Though this pest is on the increase in many localities of the Island, yet in some other places there appears to be a marked decrease, this reduction is possibly due either to the high incidence of the parasites *Elis thoracica*, F. and *Tiphia parallela*, Smith or to other causes as yet undetermined.

The determination of the sex ratio and the percentage of gravid females has been started systematically since the beginning of this campaign with a view to obtaining some data which might in the future help to provide an improved scale in the premium paid for the number of beetles captured.

Experiments with the following entomogenous fungi, viz: *Metarrhizium anisopliae*, Sorek, *Beauveria densa*, Link, *Beauveria bassiana*, Bals, have been tried on Phytalus larvae. It results therefrom that two of these fungi, namely *M. anisopliae* and *B bassiana*, have been found to infest Phytalus larvae in the laboratory to the extent of 20% and 35% respectively. Infestations of the same in the fields show that *B. bassiana* thrives best in the various localities of the island. Its degree of infestation in some centres with a hot and wet climate reaches a maximum of 28%, with a mean of 12%. The infestation with *M. anisopliae* ranges from 0–6% in the field trials, whilst with *B. densa* no infection was obtained in open air.

At the time of writing, *Elis pilesella de Sans*, imported from Madagascar, has been recovered in one locality, thereby showing that it can adapt itself on Phytalus in this island.

At the request of planters concerned several liberations of *Elis thoracica*, F. and *Tiphia parallela*, Smith were made during the year in various infested centres.

*Other serious insect pests of the year.*

The red winged locust, *Nomadacris septemfasciata*, Serv.—From January to the end of February, the red locust was found in great numbers in various places over the island, doing sometimes serious damage to cane plantations. On one sugar estate over one million hoppers were destroyed during the above period. (Hand collection was resorted to and a prenium of 3–5 cents per hundred insects was paid).

Baits composed of Bran, Molasses, and Sodium Arsenite were tried with little success. Periodic dissections of adult insects were made with a view to determining the laying period and the sexual maturity; from February to end of December, no sexually mature or gravid insect was found.

It was noticed that the Uba variety of cane was the favourite food of the locust as compared with the other varieties, which were but slightly attacked.

Indigenous parasites of this locust have not yet been recorded. It is intended to import from South Africa, through the courtesy of the

Chief Entomologist of that country, the parasite *Wohlfahrtia cuvittata*, Villon. which possibly might adapt itself to the red-winged locust in Mauritius.

*Fruit Flies.*

The two cucurbit flies *Dacus emmerezi*, Bez and *Dacus ciliatus*, Lwe. were very common during the year, destroying sometimes completely a whole plantation. The life history of these flies has been worked out; their whole life cycle varies from 18 to 25 days. Various scents and poisoned baits were used with no great success. It is contemplated to import from South Africa, through the co-operation of Mr. T. J. Naude, Ph.D., the Chief Entomologist of the Department of Agriculture, Pretoria, parasites of these fruit flies or a very near species, which might possibly establish a partial control on these pests in Mauritius.

A first consignment of the Braconid parasite, *Opius phaeostigma*, Ulkm. was received in October; out of the 34 puparia received by post, only one male parasite hatched in the laboratory.

Lawn cut-worm—*Crambus emmerezellus*, Joan.—This Pyralid moth continued to be a serious pest of lawns, though its ravages in some parts of the island were markedly less than in the preceding years. Its attacks this year were more pronounced at the beginning of the summer season instead of the winter season as in previous years. It was found that the application of Cyanogas, at the rate of 2 grms. per litre of water followed immediately by a thorough watering or flooding killed a large number of the larvæ. In one case 4,000 larvæ were found dead after a first application. Mass inoculation of infested lawns with the entomogenous fungi, *Beauveria bassiana* and *Metarrhizium anisopliae* has been unsuccessful. A good number of *Crambus* caterpillars were found naturally attacked by an indigenous entomogenous fungus, not yet identified.

The following parasites were obtained during the course of the breeding of this pest in the laboratory, viz: an Icneumonid, and a Tachinid, parasites of the larvae. A Bombylid, *Villa unifasciata* Macq was also obtained from the chrysalis of the moth.

*Termites.*

It has been ascertained that seven species of Termites are causing damage to timber in Mauritius, viz: four different species of *Coptotermes*, two species of *Calotermes* and one species of *Nasutitermes*.

*Chrysomphalus ficus*, Ashm on *Fourcroya gigantea.*

A survey was made on the incidence of this insect pest in the more important aloe plantations of the island. It results therefrom that this insect is widespread throughout the island, performing considerable damage in some localities. *C. ficus* is apparently kept under control in Mauritius by a high degree of parasitism by Microchalcids. From 5 to 47% of the female scales were found parasitised by *Comperiella bifasciata*, How. this parasite is unfortunately hyperparasitised in some cases by the Eulophid, *Marietta carnesi*, How. to an extent of 86% in some cases. The male scales are also parasitised by another micro-wasp

not yet identified. Conjointly with the attacks of the above endo parasites, *C. ficus* is sometimes very severely attacked by the predator, *Rhizobius sp.* which completely swept this pest from aloe plants at a certain time of the year.

The Coconut Scale, *Aspidiotus destructor*, Sign.—Coconut plantations over the island are severely threatened by the attacks of this scale insect. To cope more efficiently with this pest, it is intended to import from Ceylon or Trinidad, predators which are reported to keep this coccid under natural control, as local parasites and predators do not apparently exercise a very effective check.

The Mealy Bug, *Pseudococcus brevipes*, Ckll on Pineapple.—This mealy bug is very common on all the pineapple plantations of the island. As this insect is reported to cause a wilt of pineapple in other countries, its role locally in connection with this disease is at present under study.

*Laspeyresia? molesta* on peach.

This moth is a major pest of peach fruits in some localities. In some cases 65% of the young fruits drop through the attacks of this pest. Its life cycle has been worked out and is of about 40 days, for one period of the year, October to December. Control measures: Bordeaux mixture and lead arsenate were tried but too late in the season to obtain any reliable results.

*Forest pests* from specimens sent by the Conservator of Forests.

Twigs of mahogany were found infested by an *Argyroploce* and a Pyralid moth.

*Zebronia phenice*, Cram was recorded as a pest of Tecoma.

*Experiments with various insecticides.*

During the year experimental trials were made with various insecticides.

*General activities of the Division.*

The Assistant Entomologist was in charge of the Division pending the appointment of an Entomologist. Lectures and practical demonstrations in Entomology and Agricultural Zoology were delivered by the Assistant Entomologist to the students of the College of Agriculture. Several visits to estates were paid by the officers of this Division respecting advice and demonstrations on the control of many insect pests.

The plants, seeds and fruits examinations at the port of entry were carried out by the Assistant Entomologist and the Scientific Assistant conjointly with officers of the Botanical and Agricultural Divisions.

*Publications.*

The following articles, notes or studies were prepared during the course of the year :—

(*a*) Notes on Entomogenous fungi against Phytalus smithi.

(*b*) Le statut actuel des insectes nuisibles et des insectes utiles à l'Agriculture à l'Ile Maurice.

(c) Un ennemi du Cocotier, *Aspidiotus destructor*. Sign.
(d) Une peste de l'aloès à Maurice.
(e) A study on the Moth Borers of Sugar Cane.
(f) Le Papillon des arbres à épines, *Papilio demodocus*, Esp.
(g) Synopsis of the Scarabeid larvae of Mauritius.

*Acknowledgment.*
The valuable services, during the whole year, of Mr. R. Mamet, a post graduate student, are hereby recorded.

A. MOUTIA,
Assistant Entomologist.

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## CHEMICAL DIVISION.

*Investigational work.*

During the year under review, an Ordinance (No. 18) was enacted by His Excellency the Governor to provide for the identification of rum illicitly manufactured. This Ordinance was based on the suggestions contained in a formal report submitted by this Division at the end of the investigation concerning illicitly produced local rum.

The main lines of the report may be summarised as follows:—The chemical compound known as furfuraldehyde characterises "pot still" spirit and is absent from "patent still" spirit.

Illicit distillers are producing "pot still" spirit and analytical results definitely show that furfural is always present in the illicit rums produced locally although the amount varies considerably.

It was suggested that the furfuraldehyde determination should be used as a test to detect "illicit" rums. It was therefore recommended:—

(*i*) that a systematic chemical check be exercised at the General Warehouse on all rums sent in by licensed distillers; Government would then be in a position to carry out an efficient control of all the rums put on the market.

(*ii*) that only rum found free of furfural should be allowed to leave the General Warehouse.

(*iii*) to prescribe that any rum found to contain more than 0.1 gm. of furfuraldehyde per hectolitre of alcohol at 100° should be deemed illicit.

*Examination of tobacco and tobacco soils.*

In connection with manurial experiments carried out by the Tobacco Officer at La Ferme, samples of tobacco leaves were analysed on the same line as at the Imperial Institute. The nitrogen, fats and resin and nicotine content was calculated on the material containing 14% moisture.

The nicotine content ranged from 1.70% to 4.16%, the ash amounted to between 12.11% to 18.3%, and the chlorine between 8.94% to 15.7%.

Considering that the amount of chlorine in soil might influence the quality of tobacco leaves, samples of soil were taken from different parts of the island where tobacco is grown and the chlorine content was determined accordingly. In general it may be taken that the figures are rather high compared with published analyses, ranging from 0.014% to 0.021%, in America the figures range from 0.003% to 0.011%, in Rhodesia from 0.003% to 0.006%, and in Nyasaland from 0.004% to 0.017%.

*Soil Survey in the Northern District.*

So as to cover the area of Riche Terre and Terre Rouge districts where an irrigation scheme is considered, samples of soil were systematically taken and chemical as well as mechanical analyses were carried out thereon.

The result of the analyses showed that all these soils are extremely alike in character and possess all the characters and features of red lateritic soils. Such type of soil is commonly found in the Northern district of the island.

*Papain Experiments.*

Experiments on a very small scale were started in June at C.E.S. to ascertain if Papaya planting could be profitably undertaken in Mauritius for the supply of papain.

The yield given by some varieties was quite satisfactory and the crude papain obtained appears to be of a good quality; it might therefore be interesting to work on a larger scale.

*Analysis of milk from the Government Dairy.*

The analysis of samples of milk was carried out as usual, butter fat and solids not fat being determined. The average figures are given below; these figures are quite in keeping with those of the previous year.

| | Fat | Solids not fat |
|---|---|---|
| Morning milk ... | 3.9% | 8.03% |
| Evening milk ... | 4.5% | 8.35% |

*Work done for other Government Departments.*

Samples of coal were sent as usual by the Railway Department, the calorific value, sulphur and ash content being determined.

The control of the rum sent by local distillers to the General Warehouse was performed on behalf of the Excise Department and in this connection 207 samples were examined and 314 determinations carried out thereon.

The Police Department sent 40 samples of rum deemed to be illicit; on two or three occasions reports were submitted involving legal prosecution.

*Routine Analysis.*

1,203 samples were received, on which 2,377 estimations were performed. In connection with investigational work 295 samples were analysed and 724 determinations were carried out.

*Education.*

The usual duties in relation to the teaching of Chemistry at the Mauritius College of Agriculture were performed by the lecturer in Chemistry; in the absence of Mr. F. Berchon on leave Mr. J. Halais was temporarily in charge of the first year students.

Mr. R. Lincoln was appointed one of the four examiners for the Examination for the Registration of Agricultural Chemists.

*Miscellaneous.*

Mr. R. Lincoln and Mr. R. Rivalland have been both appointed Government Analysts and have been in charge temporarily of the chemical control demanded by Ordinance 18: in this connection they had to appear in Court on two occasions as Government experts.

R. LINCOLN,
Chemist.

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## TOBACCO DIVISION

*La Ferme Tobacco Station.*

The manurial experiments referred to in my last report were continued, but complete results are not available, as harvesting was still in progress at the end of the year.

*Variety Trials.*

Trials were conducted with the following varieties during the year:—Big Orinoco, Gold Leaf, Yellow Pryor, Hickory Pryor Hester, Warne and Adcock.

Seeds of the following varieties for trial were imported from Nyasaland towards the end of the year:—Cash, Flanagan, White Stemmed Orinoco, Narrow Leaf Orinoco, Warne, Harrison Pryor resistant, and White Burley resistant.

*Burley Trials.*

Further trials were carried out with R.R.R. Burley and this variety is now promising well and would appear to be eminently suitable for small growers. Endeavours will be made to make field trials during the year.

*Seed Selection.*

Special selection work was continued with the variety Amarello, progeny from 29 plants being planted for further selection.

The planting of land at Mouna for the purpose of obtaining reliable seed for distribution to planters was continued during the early months of the year.

All the variety trials and seed selection work was taken over by the Tobacco Breeding Officer appointed by the Government Tobacco Board towards the end of the year.

*Buildings.*

Another flue curing barn was erected at the station and all other buildings were kept in a good state of repairs.

*Disease.*

Attacks of Black Shank were reported from all districts; they were of greater severity during the summer season than the winter.

Mosaic disease occurred in epidemic form on several estates and the Black River district and in several cases could be traced to the seed beds. Isolated cases occurred in other parts of the Island.

There were also several cases of Damping Off in seed beds in all districts.

*Staff.*

The Government Tobacco Officer was granted leave of absence from February 1933 until December 1933. During his absence the work was performed by the Agricultural Officer.

*Estate Experiments.*

Nitrogen experiments were conducted at Anna Estate and Notre Dame but harvesting was not completed at the end of the year.

GEOFFREY CORBETT,
Government Tobacco Officer.

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## GOVERNMENT DAIRY

*Yield of milk.*

113,241 litres of milk were produced during the year as against 123,313 litres in 1932. The milk was disposed of as follows :—

| | 1933 *Litres* | 1932 *Litres* |
|---|---|---|
| Supplied to Government Hospitals ... | 40,670 | 75,001 |
| Supplied to the Public ... ... | 65,262 | 39,421 |
| Fed to calves ... ... | 4,410 | 8,452 |
| Samples for control ... ... | 393 | 439 |
| Rejected on account of Surra ... | 2,506 | ... |

The milk was sold at the rate of 22 cents per litre.

*Expenditure and Revenue.*

The following shows a detailed statement of the expenditure and revenue of the Government Dairy for the calendar year 1933 :—

| *Expenditure.* | Rs. c. | *Revenue.* | Rs. c. |
|---|---|---|---|
| Grain ... | 8,845.08 | Milk sold to Hospitals | 8,947.40 |
| Fodder ... | 5,797.65 | „ Public | 14,357.64 |
| Litter ... | 1,781.25 | Manure ... ... | 4,516.80 |
| Repairs and renewals | 1,725.41 | Stock sold ... | 880.00 |
| Salaries and wages ... | 5,463.32 | | |
| Other Charges ... | 1,834.68 | | |
| Cost of delivery of milk | 2,426.00 | | |
| Total Rs. | 27,873.39 | Total Rs. | 28,701.84 |

*Births.*

36 births were recorded : 16 females and 20 males.

*Deaths.*

Four cows died during the year : one from pneumonia, one from peritonitis, one as a sequel to antepartum paralysis and one broke her collar bone accidentally.

*Sales*

Twenty calves were sold to breeders, 7 females and 13 males.

*Abortion.*

The results of vaccination were more accentuated this year, the number of cases of abortion having dropped to four as against twelve in 1932 and twenty one in 1931.

*Surra.*

This flyborne disease occurred during the year in the Dairy herds. Eleven cows and the draft bullock were affected. The latter, after treatment was sold to the butcher, while the cows were still under observation at the end of the year.

Y. LEFEBURE,
Officer in charge.

## STATISTICAL DIVISION.

*Agricultural statistics.*

The activities of the division were maintained on the same lines as heretofore.

*Agricultural meteorology.*

The scope of the work was extended during the year by the inauguration of a dozen more rainfall stations.

*Agricultural education.*

The general management of the agricultural college was carried on on the usual lines under the direction of the Principal and with the help of the College Clerk. No change in the lecturing duties occurred.

*Special Work.*

A survey of cane varieties grown on estates was carried out during the year.

M. KOENIG,
Statistician.

## CO-OPERATIVE CREDIT SOCIETIES

*Administration.*

There were no changes in the personnel of the administration during the year. Provision for the salary of a whole time Assistant Registrar has been approved since July, and the question of filling such a post is under consideration. With a view to educating the members of the societies in matters of co-operation, the meetings of the managing

committees of the societies are being attended by the Inspectors, late in the afternoon and even on Sundays and Public Holidays, in order, in particular, to guide the members in the question of loans to be issued.

*Capital.*

The total working capital derived from the sources mentioned in the last year's report was Rs. 300,392. Advances totalling (*i*) Rs. 940 were repaid to Government by the Societies in active operation; (*ii*) Rs. 169.90 by the dissolved societies of Baramian and Vieux Grand Port. The sum of Rs. 880.10 representing the irrecoverable balances due to Government by the Baramian and Vieux Grand Port societies were written off. The total amount of advances still due to Government on the 31st December was Rs. 1,650.

The total Reserve Fund of the societies is now 3.16 times the value of the shares originally contributed by the members.

*Dissolved Societies.*

The number of dissolved societies which last year stood at nine remained the same. It has not been possible to close liquidation proceedings in the case of any of these societies.

*Societies, Dividend and Interest.*

One new society was registered during the year. The number of societies in operation in the Island was 29. None of the societies declared a dividend. The rates of interest on loans to members charged by the societies ranged from 6% to 12%.

*Loans to Members and Recoveries.*

The total of the loans issued during the year was much higher than that issued the previous year. The standard of recoveries was also higher than that of last year. The societies have continued to devote their attention chiefly to the grant of loans for cane cultivation, and in a few cases for tobacco, vegetables and other food crops.

The position of most of the societies has materially improved. This result has been obtained through frequent inspections at a late hour in the afternoon and even on Sundays and public holidays; also through a very stern and thorough overhauling of their affairs at extraordinary general meetings.

*General Meetings.*

Extraordinary general meetings of 19 of the societies were held during the months of March and April; and the annual general meetings of all the societies were held in July—August. At these meetings the books of the societies were closely scrutinised. At the same time the debtors present were minutely examined as to their exact financial position. Letters reviewing the affairs of the society and advice given, were sent to the President of each society. In the case of some societies programmes of the work they had to do during the year were also sent.

*Demonstration Plot.*

A Demonstration Plot for the benefit of the members of the society in particular, and the other agriculturists of the locality in which the society operates, was started by the Saint André society.

*Amendment of Co-Operative Ordinance.*

One of the outstanding event of the year was a critical examination of the Rules and certain Sections of the main Ordinance governing the working of the societies with a view to general revision.

The Secretary of State has been pleased to offer his observations on the various points raised, and it is gratifying to note that in due course it will be possible to produce the necessary legislation.

The general condition of the societies this year shows a marked improvement. It is hoped that with the appointment of a whole time Assistant Registrar the activities of the additional inspectors, amended legislation and the advent of improved conditions throughout the Colony generally, a further distinct improvement of the position of these societies may eventuate. The change will not be an immediate one; long years of semi-stagnation, the establishment of abuses through inefficient legislation and ignorance will require considerable effort to eradicate.

The work of these societies forms the subject of a special annual report issued in August. The details of the working thereof for the financial year ended 30th June, 1933 are shewn in the annexure to such report.

M. BURRENCHOBAY,
Inspector of Co-operative Credit Societies.

## RODRIGUES.

CLIMATIC CONDITIONS 1933 :—*Rainfall.*

| | Oyster Bay | | La Ferme | |
|---|---|---|---|---|
| | Rainy Days | Inches | Rainy Days | Inches |
| January ... | 5 | 1.08 | 6 | 3.46 |
| February ... | 9 | 5.23 | 5 | 2.20 |
| March ... | 17 | 9.75 | 7 | 8.78 |
| April ... | 17 | 3.11 | 7 | 2.36 |
| May ... | 12 | 2.87 | 8 | 2.99 |
| June ... | 12 | 1.36 | 8 | 1.32 |
| July ... | 12 | 1.63 | 7 | 1.43 |
| August ... | 16 | 2.86 | 13 | 3.53 |
| September ... | 7 | 1.32 | 3 | 0.34 |
| October ... | 7 | 1.13 | 7 | 0.92 |
| November ... | 2 | 0.16 | 0 | 0.00 |
| December ... | 7 | 2.55 | 1 | 1.24 |
| | 123 | 33.05 | 72 | 28.57 |

*Highest rainfall in one day.*

Oyster Bay. On the 6th March : 3.66 Inches
La Ferme " 3.32 "

*General Conditions.*

Dry weather conditions at the beginning of the year were, as usual, the cause of scarcity of food crops. The inhabitants however were able to go through that hard period without asking for assistance, as most of them were more or less provided with ready cash, the produce of Rodrigues having found in February a ready market at a quite unexpected price, the result of competition amongst traders.

The first rainfall allowing plantations to be started occurred on the 26th of February. The season proved fairly good for agriculture during the period March to August. From September to December the dry season was again experienced, the rainfall during the year being 11.24 inches less than in 1932, and 12.47 inches less than the average for the last ten years.

Except for the period March to August, the conditions of grazing in the Cattle Walk were particularly poor at the beginning of the year and again from the month of October onwards authorisation was given for the animals to be unfenced during the night.

In October water was becoming scarce in many rivers and some of them had dried on parts of their courses.

*Maize.*

The first crop gave a good yield. A large quantity of this produce was again this year, shipped to Mauritius. Plantations made in July and August failed or gave very poor yields.

*Sweet Potatoes.*

Have done quite well.

*Manioc.*

Planted for the first time this year as in 1926, has done well. The occurrence of "die-back" disease has been much less in evidence.

*Beans.*

The plantations suffered from the effects of dry weather conditions. Mosaic disease was prevalent. The yield obtained was rather poor.

*Yams, Eddoes and Tannias.*

Were planted on a small scale. Yams suffered from the unfavourable weather conditions, eddoes and tannias proved more resistant.

*Garlic and Onion.*

The area planted has been somewhat limited. A fair yield was obtained.

*Voandzeia madagascariensis.*

Planted on a small scale gave satisfactory results.

*Tobacco.*

Considerable attention was devoted this year to the development of the tobacco industry. The farmers had given up the growing of this

crop, owing to the losses encountered last year, as the poor type of tobacco leaf they produced had been quoted at a very low price by the Tobacco Board.

The Demonstration plot created at La Ferme proved its great utility in inducing the farmers to start the growing of better varieties of tobacco suitable for manufacturing into cigarettes. Plantations were made on a small scale and the results obtained were satisfactory. 1,644 kilos of cured leaves were shipped to the Warehouse The quality of the leaf showed a marked improvement on the previous consignments. The farmers have been quite satisfied with the prices obtained. An increased interest is consequently manifested.

Acacia (*Leucaena glauca*) was abundant. The quantity exported was practically the same as last year.

*Livestock.*

The interest showed by the farmers in the improvement of breeds of livestock has continued. The rearing of guinea fowls has been started.

## Experiment Station and Stock Farm.

*Appointments.*

Mr. Oree has been confirmed in his appointment as overseer of the Agricultural Station.

*Leave.*

The Agricultural Superintendent was granted three months' leave starting from the 23rd October.

*Buildings, roads etc.*

Necessary repairs were carried out on the buildings and fences of the station. The sheep fold was enlarged. The bridge at the entrance of the station, which had been washed away during a flood, was rebuilt.

*Experimental Station.*

The routine work of the experimental station has been continued. Experiments with different varieties of food crops were carried out.

Different varieties of food crops, fruit trees etc. were grown with a view to obtaining planting material for distribution to planters.

*Stock Farm.*

The stock farm continued to give satisfactory results and the animals are maintained in good condition.

*Agricultural Instruction.*

Regular visits were paid to the holding of the planters and advice given to induce them to employ better methods of cultivation.

*School Gardens.*

A garden has been created at the new school of Lataniers. The children of that school and of the one at La Ferme are greatly interested in the work of the gardens and are making satisfactory progress in theoretical knowledge.

*Exports :—*

| | | |
|---|---|---|
| Acacia seeds (Leucaena glauca) ... | 8,753 | bags |
| Maize ... ... | 1,817½ | „ |
| Beans ... ... | 763 | „ |
| Peas ... ... | 4 | „ |
| Garlic ... ... | 359 | „ |
| Gum ... ... | 21 | „ |
| Tobacco ... ... | 62 | bales |
| Erepang ... ... | 7 | „ |
| Salt Fish ... ... | 3,842 | „ |
| Cattle Fish ... ... | 781 | „ |
| Hide ... ... | 1 | „ |
| Onion ... ... | 26 | cases |
| Ground nuts ... ... | 4 | „ |
| Chillies ... ... | 1 | „ |
| Salted lemons ... ... | 1 | „ |
| Citrus ... .. | 1 | „ |
| Bees Wax ... ... | 1 | „ |
| Musbrooms ... ... | 2 | bags |
| Timber .. ... | 120 | pieces |
| Cattle ... ... | 213 | |
| Goats ... ... | 3,137 | |
| Sheep ... ... | 677 | |
| Pigs ... ... | 1,967 | |
| Dogs ... | 16 | |
| Chickens and Ducks ... ... | 20,371 | |
| Turkeys ... ... | 205 | |

*Trefles Co-Operative Society.*

The Co-Operative Society has continued to work during the year. No application for new membership was received.

*Forestry Staff Changes.*

Forester Lecordier and Forest Guard Brunet were transferred to Mauritius and were replaced by Forester Coutet and Forest Guard Paul.

REAFFORESTATION

*Planted at Souillac.*

600 Terminalia Arjuna
250 Callophyllum inophyllum
175 Junipers

*Recruited in different localities.*

1,368 Casuarina equisetifolia
1,705 Elacocarpus serratus
640 Callophyllum inophyllum
317 Terminalia arjuna

The young trees are growing well.

R. JAUFFRET,
Agricultural Superintendent.

## PART III

*Legislation.*

The following Ordinances, Proclamations and Notifications were issued during the year :—

Proclamation No. 4 of 1933. -Prohibiting for a period of five years the shooting of certain birds.

Government Notification No. 29 of 1933.—Regulation made by the Governor in Executive Council under Article 16 of the Animal diseases, Consolidation Ordinance, 1925.

Government Notification No. 40 of 1933—Rules made by the Governor in Executive Council under Article 31 of the Co-Operative Credit Societies Ordinance 1913.

Government Notification No. 41 of 1933.—Regulation made by the Governor in Executive Council under Ordinance 3 of 1881 and 5 of 1883 respecting the Lesser Dependencies Importation of Animals.

Government Notification No. 44 of 1933.—Regulation made by the Governor in Executive Council under Ordinance 3 of 1881 and 5 of 1883, amending Regulation published under Government Notification No. 209 of 1915.

Government Notification No. 53 of 1933.—Regulation made by the Governor in Executive Council under Ordinance 3 of 1881 and 5 of 1883, amending the Regulation published under Government Notification No. 85 of 1923.

Ordinance No. 38 1933.—To provide an increased duty on sugar exported from this Colony.

Government Notification No. 61 of 1933.—Regulations made by the Governor in Executive Council under Artteles 16 and 21 of the Animal diseases (Consolidation) Ordinance 1925, extending to Rodrigues certain provisions of the said Ordinance.

*Board of Agriculture* :

The Board of Agriculture established under Ordinance 30 of 1912 consists of :—

His Excellency the Governor—*President.*

The Director of Agriculture—*Vice President.*

The following members were appointed for 1933 :—

| | |
|---|---|
| The Hon. M. Martin, C.B.E. | Mr. T. de Spéville |
| „ J. Leclézio | „ L. H. de Froberville |
| „ P. Montocchio | „ H. G. Ducray |
| „ R. Gudjadhur | „ Georges Mayer |
| Mr. Louis Espitalier Noël | „ Pundit Boleram |
| Captain H G. Hitchcock, M.B.E. | „ Pierre de Sornay |
| Mr. J. A. Duclos, K.C., C.M.G. | „ F. A. Nichols |
| „ G. Antelme | „ H. Lincoln |
| „ G. Clarenc | „ Pierre Hugnin. |

There was no meeting of the Board in 1923.

*Publications.*

The following publications were issued during the year :—

*Bulletins.*—(*a*) Etude sur les Borers de la canne à sucre et sur les moyens employés pour les combattre.

(*b*) Census of Cane Varieties grown in Mauritius in 1933.

*Leaflets.*—(*a*) Notes on the Cultivation of the Pineapple.

(*b*) Notes on Vanilla Cultivation.

(*c*) Alcohol as a Fuel.

*Reports.*—(*a*) Annual Report of the Department of Agriculture 1932.

(*b*) Report on the College of Agriculture for 1932.

(*c*) Bulletin of the Sugar Cane Research Station.

(*d*) Report on the working of the Co-Operative Credit Societies for the year ended 30th June 1933.

(*e*) Third Annual Report of the Sugar Cane Research Station for 1932.

(*f*) Final compilation of the Sugar production for the year 1932–33 sugar campaign.

(*g*) Preliminary forecast of the Sugar production for the year 1933–34 sugar campaign.

(*h*) Revised forecast of the 1933 sugar crop.

(*i*) Preliminary compilation of sugar production for 1933–34 campaign.

The following articles from Officers of this Department were published in the Revue Agricole :—

1. "L'alcool et son emploi dans les moteurs à combustion interne," by R. Avice, Assistant Sugar Technologist.

2. "Notes complémentaires sur le même sujet," by L. Baissac, Sugar Technologist.

3. "Porto Rico et son Industrie Sucrière," by L. Baissac, Sugar Technologist.

4. "Le statut actuel des insectes nuisibles et les insectes utiles à l'Agriculture à l'Ile Maurice," by L. André Moutia, Assistant Entomologist.

5. "Some studies regarding the phosphate content of sugar cane juices in Mauritius," by N. Craig, Bio-Chemist, S.R.S.

6. "Preliminary forecast of the Sugar production for the 1933–34 Sugar Campaign" by M. Koenig, Statistician.

7. "Calcul de la production sucrière probable basé sur les conditions météorologiques," by M. Koenig, Statistician.

8. "Le papillon des arbres à épines," by Jean Vinson, Scientific Assistant, Entomological Division.

9. "Revised forecast of the 1933 Sugar Crop" by M. Koenig, Statistician.

10. "Recensement des variétés de cannes cultivées à Maurice," by M. Koenig, Statistician.

11. "Quelques remarques sur le travail de nos moulins," by R. Avice, Assistant Sugar Technologist.

12. "Résultats de quelques essais de variétés de cannes" (Traduction) by N. Craig, Bio-Chemist, S.R.S.

13. "Le statut actuel des insectes nuisibles et les insectes utiles à l'Agriculture à l'Ile Maurice," by André Moutia, Assistant Entomologist.

*General.*

The Director of Agriculture served as a nominated member of the Council of Government. He acted as Chairman of the Agricultural College Board, the Phytalus Advisory Committee, the Registration of Agricultural Chemists Committee, the Tobacco Board, the Emigration of Labour Committee and of the Committee appointed to consider the possibility of irrigating the Calebasses area. He also served on the following Boards and Committees:—the Board of the Mauritius Institute, the Forest Board, the Mauritius Hemp Producers' Syndicate (Executive Committee), the Stock Breeders' Association, the Finance Committee and the Fisheries Permanent Advisory Committee.

# APPENDIX

## MEAN MONTHLY RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE STATIONS UNDER THE CONTROL OF THE DEPARTMENT OF AGRICULTURE, MAURITIUS.

| Stations | Central Experiment Station, Réduit | | | | | | | | Barkly Experiment Station Beau Bassin | | | | | Abercrombie Nursery Port Louis | | | | | Botanical Gardens Curepipe | | | Botanical Garden Pamplemousses | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Elements | Air Temperature | | | Relative Humidity | Rainfall | | Sunshine | | Temperature | | Relative Humidity | Rainfall | | Temperature | | Relative Humidity | Rainfall | | Relative Humidity | Rainfall | | Rainfall | |
| Months 1933 | Max. °C | Min. °C | Mean °C | % | Depth of rain mm. | No. of days | Hours | % of possible | Max. °C | Min. °C | % | Depth of rain mm. | No. of days | Max °C | Min. °C | % | Depth of rain mm. | No. of days | % | Depth of rain mm. | No. of days | Depth of Rain mm. | No. of Days |
| January ... | 29.1 | 21.3 | 24.7 | 67.0 | 139.2 | 15 | 277.3 | 68.1 | 30.0 | 21.4 | 65.3 | 98.7 | 11 | 31.7 | 23.8 | 62.3 | 213.3 | 17 | 75.7 | 237.5 | 17 | 157.3 | 15 |
| February ... | 28.8 | 21.1 | 24.4 | 70.7 | 164.1 | 22 | 220,8 | 60.2 | 30 1 | 21.8 | 66.2 | 138.8 | 12 | 31.1 | 23.8 | 68.0 | 172.1 | 15 | 82.4 | 214.2 | 22 | 166.3 | 12 |
| March ... | 27.5 | 21.6 | 24.0 | 78.2 | 205 7 | 29 | 224.2 | 59.5 | 29.0 | 22.5 | 71.9 | 158.8 | 20 | 30.1 | 23.9 | 69.8 | 216.3 | 19 | 84.7 | 452.5 | 26 | 205.8 | 22 |
| April ... | 26.3 | 20.3 | 22.8 | 77.4 | 101.8 | 23 | 198.9 | 57.2 | 28 3 | 20.6 | 75.1 | 37.1 | 14 | 30.4 | 23.1 | 74.5 | 57.3 | 18 | 84.5 | 378.2 | 28 | 91.2 | 18 |
| May ... | 24.6 | 17.7 | 20.6 | 77.7 | 73.0 | 25 | 229.9 | 66.2 | 26.5 | 18.5 | 74.5 | 23.5 | 15 | 29.0 | 20.4 | 74.7 | 24.1 | 16 | 80.8 | 259.8 | 28 | 54.7 | 16 |
| June ... | 22.6 | 15.8 | 18.9 | 76.9 | 66 7 | 25 | 198.4 | 60.7 | 24.6 | 17.9 | 79 2 | 23.6 | 15 | 26.6 | 19.1 | 64.6 | 66.3 | 20 | 85.4 | 194.2 | 29 | 118.2 | 24 |
| July ... | 21.1 | 13.7 | 17.1 | 78 2 | 73.8 | 26 | 244.1 | 65.7 | 23.1 | 14.8 | 66 4 | 35.4 | 21 | 25.1 | 16.9 | 59.4 | 51.4 | 28 | 84.7 | 289.0 | 31 | 102.5 | 24 |
| August ... | 21.7 | 13 9 | 17.4 | 74.7 | 34.8 | 21 | 219.3 | 62.6 | 22.9 | 14.5 | 62.8 | 17.0 | 14 | 26.0 | 16.2 | 56.3 | 22.6 | 18 | 83.2 | 190.8 | 30 | 45.7 | 21 |
| September ... | 21.6 | 14.9 | 17.7 | 71.1 | 50.9 | 20 | 206.7 | 57.7 | 23.1 | 16.5 | 65.8 | 13.9 | 20 | 25.5 | 17.9 | 58.5 | 44.4 | 17 | 78.0 | 230.5 | 29 | 71.0 | 19 |
| October ... | 24.6 | 15.9 | 19.7 | 64.8 | 22.7 | 17 | 280.3 | 72.3 | 26.2 | 16.9 | 61.1 | 12 5 | 8 | 28.0 | 19.3 | 50.8 | 8 4 | 9 | 75.5 | 93.2 | 29 | 11.5 | 7 |
| November ... | 26.8 | 17.7 | 21.6 | 59.8 | 15.1 | 11 | 299.6 | 76.8 | 27.9 | 18.3 | 63.2 | 7.7 | 7 | 29.6 | 21.8 | 51.7 | 10 1 | 12 | 74 8 | 64.8 | 26 | 22.0 | 16 |
| December ... | 28.2 | 19.7 | 23.2 | 65.1 | 47.3 | 19 | 256.8 | 62.4 | 29.3 | 20.6 | 61.8 | 55.1 | 17 | 31.5 | 21.7 | 56.8 | 55.3 | 16 | 73.7 | 97.0 | 28 | 56 5 | 16 |
| Means ... | 25.2 | 17.8 | 20.5 | 71.8 | 995.1 | 253 | 2,856.3 | 64.9 | 26.7 | 18.7 | 67.8 | 622.1 | 174 | 28.7 | 20.7 | 62 3 | 941.6 | 205 | 80.3 | 2701.7 | 323 | 1102.7 | 210 |
| | | | | | Totals | | Totals | | | | | Totals | | | | | Totals | | | Totals | | | |

REMARKS.—Air Temperature, at Réduit, is obtained from hourly measurements of thermograms standardised daily at 9 h. and 15 h. Relative humidity is obtained from observations of dry and wet bulb thermometers at 9 h. and 15 h; sunshine from a Campbel-Stokes Sunshine recorder. Rainfall is measured daily at 7 h. At the other stations, maximum and minimum, dry and wet bulb thermometers are read daily at 9 h. and 15 h. and rainfall measured at 7 h.